

# Preliminary Investigation of the Relationship between Morphology and Phonology in SENĆOŦEN (Saanich)

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## ABSTRACT

In this paper, I argue that stress in SENĆOŦEN is sensitive to the morphological structure of the word. Supporting arguments presented by Kiyota (2002) I provide further evidence that trochaic feet are aligned to the right edge of a morphological stem. I look at two types of morphologically complex forms. The first are words which involve reduplication and the second are those that involve lexical suffixes. It is the case that these types of words do not always follow the default penultimate stress system previously proposed for SENĆOŦEN (see Leonard 2006; Montler 1986). However, rather than assuming that stress in SENĆOŦEN is highly complex with inherently strong and weak morphemes competing for stress (see Montler 1986, Kiyota 2002), I propose that a word can have more than one morphological stem and that stress prefers to target a multi-syllabic morphological stem rather than the rightmost one.

*Keywords:* SENĆOŦEN; Saanich; Salish; Phonology; Morphology; Stress.

## 1 Introduction

Building on previous literature which proposes that Salish words have an internal structure of phonological and morphological domains (Bar-el and Watt 2000, Blake 1996, 2000, Czaykowska-Higgins 1996, 1998, 2004, Dyck 2004, Shaw 2002, to appear, Watt 2001, Willett 2003), I argue that stress assignment in SENĆOŦEN (North Straits Salish) is sensitive to a word's morphological structure. Evidence for this claim is provided by examining the stress properties of morphologically complex words which include reduplication and lexical suffixes.

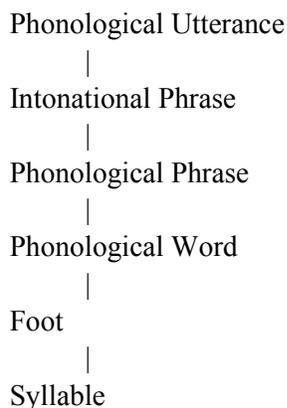
I have organized this paper into five sections. In section 2, I discuss the previous literature concerning phonological and morphological domains and discuss how these theoretical frameworks have been applied to the Salish languages. In section 3, I provide a basic phonological description of SENĆOŦEN. This includes the segment inventory and the basic stress system. Section 4 is where I argue that the phonological process of stress is sensitive to the morphological word in SENĆOŦEN. Evidence to support this argument comes from an examination of the stress properties of words which include reduplication and

lexical suffixes. Section 5 is a conclusion. All the data, unless otherwise noted, are from Montler (1986).

## 2 Theoretical assumptions

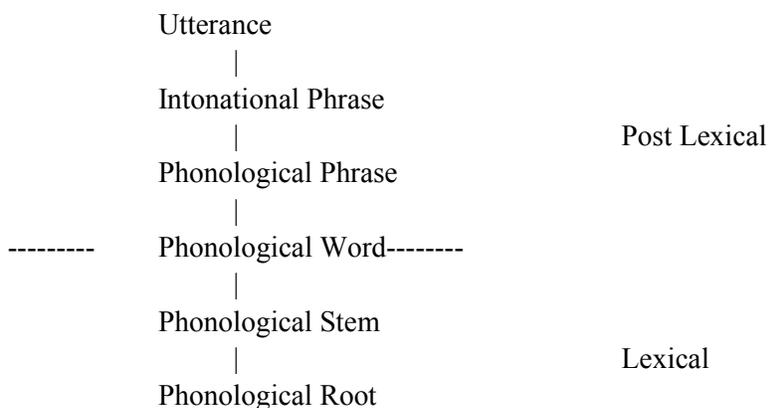
In her dissertation, Dyck (2004) provides a summary of previous work on phonological domains. I repeat here the parts of her summary which I feel are pertinent to this paper. She says that the need to distinguish between prosodic and morphological structure has been recognized for sometime: see Aoki (1966), Dixon (1977), Liberman and Prince (1977), Booij (1983), Booij & Rubach (1984), Nespor (1986), Nespor & Vogel (1986), Selkirk (1980), McCarthy & Prince (1986). All these researchers recognize the existence of a prosodic lexical entity. Often this is called the phonological or prosodic word and it is distinct from the morphological word. Motivation for such a structure comes from observations that phonological rules do not apply across an entire grammatical word. A typical hierarchy is one with the following constituents:

- (1) Prosodic Hierarchy (based on Selkirk 1980 in Dyck 2004:150)



Dyck (2004:151) also provides a summary of more recent work in the area of prosodic domains. She says that in this more recent work (for instance, in Inkelas 1993; Czaykowska-Higgins 1996, 1998; and Downing 1999), researchers have argued for more lexical substructure below the phonological word and above the metrical categories foot and syllable. Dyck (2004:151) interprets these substructures as the phonological stem and phonological root.

## (2) P-Hierarchy (adapted from Inkelas 1993:80, in Dyck 2004:151)



Evidence for these additional categories is based on observations that phonological rules sometimes require reference to a prosodic domain which is below the phonological word and outside of the metrical structure. For Inkelas (1993) metrical structure exists as a separate and distinct hierarchy from the P-structure. Inkelas (1993), assumes a co-presence model whereby words have two independent hierarchical structures, one phonological and one morphological. She further assumes that phonological processes such as stress assignment only have access to the phonological structure.

Departing from this assumption, Shaw (2004) proposes that in Hən'q'əmin'əm (Musqueam, Salish) stress has direct access to the morphological structure. By examining data involving reduplication of CVC roots, Shaw proposes that Hən'q'əmin'əm stress is aligned to the left edge of a morphological root.

Following Shaw (2004), I argue in this paper, that it is within some morphological domain that stress assignment applies. I assume, following Kiyota (2002), that this domain is a morphological stem. The basic rules governing stress assignment in SENĆOŦEN are as follows: 1) a trochaic foot must be aligned with the right edge of a morphological stem (Kiyota 2002), 2) stress feet in SENĆOŦEN are trochaic (Kiyota 2002) and 3) foot construction must not break up semantically close morphemes. I further propose that a morphological word can contain more than one morphological stem, and that faithfulness to a lexical unit coupled with stressing of a trochaic foot are more important than aligning stress with the rightmost morphological stem.

I follow Czaykowska-Higgins (1998), in assuming that the morphological word is made up of a core lexical root, which is termed the morphological root, the morphological stem, which contains the morphological root, plus lexical morphemes [LEX] that extend the meaning of the root [RT] and the morphological word, which contains morpho-syntactic morphology [MS] that adds syntactic meaning to the root. The types of SENĆOŦEN morphemes I consider to have lexical meaning include the class of lexical suffixes as well as actual and plural morphology. Below, I provide a schema of the SENĆOŦEN morphological

word based on Czaykowska-Higgins (1998). I leave the motivation of such a structure for future research.

(3) [<sub>MW</sub> MS-<sub>MS</sub> LEX-<sub>MR</sub>ROOT]-LEX]-MS]

I assume that the phonological structure of the word is not isomorphic with the morphological structure of the word. The phonological domain where stress is assigned, as I have suggested, is a maximally two syllable domain. This domain can include the morphological root with either a lexical morpheme, or it can include the morphological root with a morpho-syntactic morpheme. It can comprise of a morphological root alone, if that root is disyllabic. Below, I present a few examples of the types of morphemes which can be housed within the proposed phonological domain for stress in SENĆOŦEN.

(4) MS-LEX-<sub>[P]</sub>MROOT]-LEX-MS

(5) MS-LEX-<sub>[P]</sub>MROOT-LEX]-LEX-MS

(6) MS-<sub>[P]</sub>LEX-MROOT]-LEX-MS

(7) MS-LEX-MROOT-<sub>[P]</sub>LEX]-LEX-MS

Before motivating the interaction between morphology and phonology in SENĆOŦEN, it is first necessary to outline the basic phonological properties of the language. I do this in the following section and return to the morpho-phonological properties of SENĆOŦEN stress in section 4.

### 3 Phonological properties of SENĆOŦEN

In this section, I discuss the phonological properties of SENĆOŦEN. In section 3.1, I provide the consonant and vowel inventory. In section 3.2, I discuss the difference between full vowels versus schwa and finally in 3.2, I present the basic stress system that has been proposed for SENĆOŦEN.

#### 3.1 Segment inventory

As in the other Salish languages, the consonant inventory of SENĆOŦEN is extensive, with a total of 36 contrastive segments.

(8) SENĆOŦEN consonant inventory (Montler 1986: 7)

p	t		č	(k)	k <sup>w</sup>	q	q <sup>w</sup>	
p̣	ṭ <sup>0</sup>	ṭ'	č̣		ḳ <sup>w</sup>	q̣	q̣ <sup>w</sup>	ʔ
	θ	s	ʦ		x <sup>w</sup>	š	š <sup>w</sup>	h
m	n	l	y		w	ŋ		
ṃ	ṇ	ḷ	ỵ		ẉ	ŋ̣		

The vowel system, again typical of the Salish languages, consists of four vowels and schwa.

(9) SENĆOŦEN vowel inventory (Montler 1986: 7)<sup>1</sup>

i	u
e	ə
	a

### 3.2 *Properties of schwa*

Schwa in the Salish languages is considered to be predictable, serving to break up illicit consonant clusters (Kinkade 1998). Schwa is overlooked, by the phonology, in most cases of stress assignment in the sense that, if there is a schwa and full vowel in a root, stress will fall on the full vowel even if this results in a violation of the regular stress pattern. Shaw et al (1999) assume that full vowels have moraic structure and that schwa does not. Also they hypothesize that schwa has no place features while the full vowels do. The representation for full vowels and schwa is given in (12).

(10) Representation of full vowel and schwa (Shaw et al 1999: 5)

	a. full vowel	b. schwa
Nucleus	Nuc	Nuc
Moraic Weight	μ	
Root Node	o	
Features	[f]	

### 3.3 *Basic stress*

Montler (1986: 7) observes that the basic stress system in SENĆOŦEN is to stress the first full vowel in a word. If there is no full vowel then stress the first schwa. Below, I

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<sup>1</sup> I consider schwa to be predictable (Leonard 2006); however, in this paper I remain neutral about whether or not it is underlying. Montler (1986) includes schwa in his underlying representations and because I am using his data I will do the same in this paper.

exemplify this basic stress system with disyllabic roots. The examples in (11-13) show that roots containing two full vowels will stress the first full vowel.

- (11) sk<sup>w</sup>ati 'crazy'  
 (12) sq<sup>w</sup>áŋi? 'head'  
 (13) č<sup>w</sup>éwi? 'dish'

Examples (14-19) show that disyllabic roots containing a full vowel and a schwa will stress the full vowel.

- (14) sqé<sup>t</sup>əǰ 'clam fork'  
 (15) spé<sup>?</sup>x<sup>w</sup>əń 'misty'  
 (16) sŋénət 'mountain'  
 (17) sqə<sup>l</sup>éw 'beaver'  
 (18) səní? 'Oregon grape berry'  
 (19) ʔən<sup>?</sup>ax<sup>w</sup> 'bring over'

Examples (20-22) show that roots containing two schwas will stress the first schwa.

- (20) təń<sup>ə</sup>x<sup>w</sup> 'earth'  
 (21) qə<sup>l</sup>əǰ 'salmon eggs'  
 (22) k<sup>w</sup>ə<sup>l</sup>w 'skin'

For these very basic forms the proposed analysis is that stress feet are trochaic and that SENĆOTEN is sensitive to the weight distinction between full vowel and schwa (Leonard 2006)

#### 4 The morpho-phonological properties of SENĆOTEN stress assignment

In this section, I argue that the phonological property of SENĆOTEN stress assignment is sensitive to the morphological structure of the word. I examine morphologically complex words involving both lexical suffixes and/or reduplication. The stress facts of these types of words support the existence of a morphologically sensitive trochaic foot where stress applies.

This section is organized as follows: 4.1 is a discussion of the stress facts in words involving reduplication, and 4.2 is a discussion of the stress facts in words with lexical suffixes.

##### 4.1 Reduplication

Reduplication is used in SENĆOTEN to denote many morphological meanings. These include: 'plural', 'diminutive', 'characteristic' and 'actual' (also known as progressive). In this paper, I focus on the 'actual' and 'plural' reduplication.

## 4.1.1 CV-Actual

The ‘actual’ reduplication presents two problems. The first is that sometimes the base is stressed and sometimes the reduplicant is stressed. The second problem is that in all cases it appears that the ‘actual’ forms are not following the basic stress system. However, a clear pattern presents itself when we take a closer look at the data. In (23-35) we see that stress falls on the base. Note that all the morphological roots that the ‘actual’ are formed on are disyllabic. The reduplicant and the root form one morphological stem. Following Kiyota (2002) I assume that a trochaic foot is constructed to the right edge of this morphological stem. These forms are following the basic stress pattern observed by Montler (1986), Kiyota (2002) and Leonard (2007).

- |      |           |             |        |           |
|------|-----------|-------------|--------|-----------|
| (23) | šəšiwəʔ   | ‘urinating’ | šiwəʔ  | ‘urinate’ |
| (24) | kʷəkʷécəŋ | ‘yelling’   | kʷécəŋ | ‘yell’    |
| (25) | tətʰləm   | ‘singing’   | tʰləm  | ‘sing’    |

In contrast there are other examples of the ‘actual’ where the reduplicant is stressed. In these cases, the morphological root is only one syllable. The reduplicant and the root together constitute a morphological stem. This stem is also a trochaic foot thus the stress pattern of these types of words is as expected.

- |      |         |                      |      |               |
|------|---------|----------------------|------|---------------|
| (26) | qéqəŋ   | ‘stealing’           | sqəŋ | ‘It’s stolen’ |
| (27) | tétʰiʔ  | ‘canoe racing’       | téy  | ‘canoe’       |
| (28) | sqéqəw  | ‘He’s resting’       | qew  | ‘rest’        |
| (29) | qʷəqʷəl | ‘He’s saying it now’ | qʷəl | ‘say’         |
| (30) | čəyəq   | ‘He’s getting big’   | čəq  | ‘big’         |

The examples in (31) and (32) consist of a morphological root that is one syllable.

- |      |                        |                    |         |               |
|------|------------------------|--------------------|---------|---------------|
| (31) | kʷiwəntəl <sup>2</sup> | ‘They’re fighting’ | kʷintəl | ‘They fought’ |
| (32) | tʰtəkʷsən              | ‘He is tripping’   | tʰkʷsən | ‘He tripped’  |

These roots are concatenated with a suffix (in some cases grammatical and in other lexical). They also have undergone reduplication. If all the morphemes in this word constitute one morphological stem then we would expect penultimate stress. In this case it appears that a trochaic foot is not aligned with the right edge of the morphological stem. I argue that in these cases the suffixes start their own morphological stem. It may be the case that these types of suffixes are in a compounding relationship with the first morphological stem (see

<sup>2</sup> The first consonant in this root surfaces as kʷ in the onset unless it is glottalized then it will surface as w (Montler 1986).

Gerdts, 2003). The assignment of stress targets the morphological stem that has more than one syllable and aligns to its right edge.

#### 4.1.2 CVC-Plural

All the examples of CVC- plural reduplication in Montler (1986) are built on morphological roots that contain two syllables. In all cases, to lose any of this morphological structure would result in the loss of the core meaning. I assume then that the reason that the reduplicant is not stressed in these examples is simply because a trochaic foot is aligned with the right edge of the morphological stem.

- (33) sʔəlʔéʔlɥəx<sup>w</sup> ‘medicines’      sʔéʔlɥəx<sup>w</sup> ‘medicine’  
 (34) sʔəlʔéʔləx<sup>w</sup> ‘elders’      sʔéʔləx<sup>w</sup> ‘elder’  
 (35) ɥəɥəɥəɥəʔs ‘His children’      ɥəɥəʔ ‘children’

#### 4.1.3 -Ci- Plural

Again, the Ci- plural reduplication examples found in Montler (1986) only include examples of disyllabic morphological roots. As in section 4.1.1, I assume that stress is aligned to the right edge of a morphological stem.

- (36) swəwíltən ‘nets’      swáltən ‘net’  
 (37) čəčínəs ‘teeth’      čánəs ‘tooth’  
 (38) ɥəɥíqsən ‘a lot of noses’      ɥáqsən ‘nose’

### 4.2 Lexical suffixes

#### 4.2.1 Definition of lexical suffixes

According to Montler (1986: 64) lexical suffixes are derivational morphemes with substantive root-like meanings which always occur bound to a root. Many Salishanists have proposed that lexical suffixes are in fact bound roots as opposed to suffixes (Carlson 1990, Kinkade 1998, Czaykowska-Higgins 2004, Urbanczyk 2000, Blake 1998). One of the reasons to suppose this is the case is that disyllabic lexical suffixes always carry primary stress.

In this section, I focus on two words which both contain two monosyllabic lexical suffixes. These words prove to be exceptions to the general stress pattern outlined in Section 3. The stress facts of these lexical suffixes provide further evidence that the phonological process of stress assignment is sensitive to morphological structure in SENĆOŦEN.

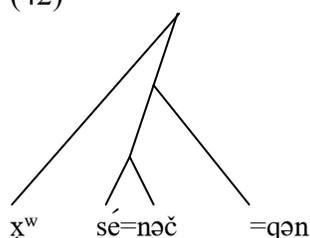
#### 4.2.2 Lexical suffix evidence for phonological root domain

Leonard (2006) accounts for many forms which involve lexical suffixes by proposing that trochaic feet are aligned to the right edge of a word. The majority of three syllable SENĆOŦEN words containing lexical suffixes do in fact exhibit a penultimate stress pattern.



‘throat’. The overall meaning is ‘the language of Saanich’. I argue that the lexical suffix is modifying the word ‘Saanich’ and that if stress were on the lexical suffix =neč ‘bottom’, then we would have a situation where some morpheme ‘se’ is modifying ‘nečqən’ which may perhaps mean something like ‘bottom language’. In short the semantic meanings of the two lexical suffixes do not combine in a meaningful way, but the morphemes ‘se’ and ‘neč’ do. Below, I present a diagram showing the semantic structure of the example in (42).

(42)



Revithado (1999) says that the placement of stress in polysynthetic languages is governed by principles of word composition and head dominance. When the morpho-syntactic structure is projected onto the prosodic structure the most important constituent surfaces with main stress. In the case of (42) the prosodic/phonological structure is mirroring the morpho-syntactic structure. The first morphological stem is the most important constituent in this word and it receives main word stress.

In sum, the default stress pattern in SENĆOFEN is to align a trochaic foot to the right edge of the word. However, foot construction is sensitive to the bond between morphemes. If two or more morphemes form a stem then stress is aligned to the right edge of that stem.

## 5 Conclusion

This paper argues that the phonological process of stress assignment in SENĆOFEN is sensitive to the morphological structure of a word. Stress in SENĆOFEN is governed by the following principles. 1) A trochaic foot is aligned to the right edge of a morphological stem. 2) A word can contain more than one morphological stem. 3) Trochaic feet will not be built across two morphological stems if one is disyllabic.

Evidence for this type of stress system is provided by analyzing first morphologically complex words involving reduplication. These kinds of words illustrate that if a disyllabic root is reduplicated the reduplicant will not be stressed. This is because the morphological root and the reduplicant together constitute a morphological stem and trochaic feet are aligned to the right edge of a morphological stem. The reduplication of a monosyllabic morphological root results with stress on the reduplicant regardless of whether or not there is a suffix attached to the morphological root. In these cases the suffix forms its own morphological stem. Trochaic feet are constructed around the morphological stem which is

disyllabic rather than being constructed across two morphological stems. It is for this reason that trochaic feet can not simply be aligned to the right edge of a word.

The second piece of evidence comes from the examination of forms containing lexical suffixes, which do not follow the basic stress system of the language. These forms also illustrate that the construction of trochaic feet pays attention to the morphological structure of a word. In these cases, the words contain two morphological stems stress is assigned to the stem which is disyllabic. Importantly, stress does not break up a morphological stem, i.e. a lexical unit. This is why a trochaic foot is not aligned with the right edge of the rightmost morphological stem.

In addition to predicting the stress assignment of some apparent exceptional forms left unaccounted for in Leonard (2006), this preliminary work provides a starting point to a greater understanding of the phonological and morphological structure of SENĆOTEN words. More fieldwork is necessary to investigate this topic further.

## References

- Aoki, H. 1966. Nez Perce vowel harmony and Proto-Sahaptian vowels. *Language* 42: 759-767.
- Booij, Geert. 1983. Principles and parameters in Prosodic Phonology. *Linguistics* 21: 249-280.
- Booij, Geert. And Jerzy Rubach. 1984. Morphological and prosodic domains in Lexical Phonology. *Phonology Yearbook 1*: 1-27.
- Blake, Susan J. 1998. The OCP and Root-Affix Faithfulness in St'át'imcets (Lillooet Salish). Paper presented at the 33<sup>rd</sup> ICSNL.
- Carlson, Barry. F. 1990. Compounding and lexical affixation in Spokane. *Anthropological Linguistics* 32:69-82.
- Czaykowska-Higgins, Ewa. 1998. The morphological and phonological constituent structure of words in Moses-Columbia Salish (Nxa'amxcín). In Czaykowska-Higgins, E. and M. D. Kinkade (eds.), *Salish languages and linguistics*, 153-195. Berlin: Mouton de Gruyter.
- Czaykowska-Higgins, Ewa. 2004. The morphological and phonological status of Nxa'amxcin lexical suffixes. In Donna Gerdts and Lisa Matthewson (eds.) *Studies in Salish linguistics in honour of M. Dale Kinkade*. University of Montana Occasional Papers in Linguistics No. 17.
- Dixon, R.M.W. 1977. Some phonological rules of Yidij.. *Linguistic Inquiry* 8: 1-34.
- Downing, Laura. 1999. Prosodic stem ≠ prosodic word in Bantu. In T. Alan Hall and Ursula Kleinhenz (eds), 74-98.
- Dyck, Ruth. 2004. *Morphological and Prosodic Factors in Squamish (Skwxwú7mesh)*

- Stress Assignment*. UVic Ph.D. Dissertation.
- Gerds, Donna. 2003. The morphosyntax of Halkomelem lexical suffixes. *International Journal of American Linguistics*. 69(4):345-356.
- Kinkade, Dale. M. 1998. On the origin of Salish lexical suffixes. *Papers for the 33<sup>rd</sup> International Conference on Salish and Neighbouring Languages* 33:266-295.
- Kiyota, Masaru. 2003. Plural allomorphs in Saanich. Phonology generals paper. University of British Columbia.
- Lieberman, Mark and Alan Prince. 1977. On stress and linguistic rhythm. *Linguistic Inquiry* 8: 249-335.
- Leonard, Janet 2006. *Formalising stress in SENĆOŦEN*. Uvic MA Thesis..
- Montler, Timothy. 1986. *An outline of the morphology and phonology of Saanich, North Straits Salish*. University of Montana Occasional Papers in Linguistics No. 4.
- Montler, Timothy. 1989. Infixation, reduplication and metathesis in the Saanich actual aspect. *Southwest Journal of Linguistics*, 9, 92-107.
- Montler, Timothy. 1991. Saanich North Straits classified word list. Hull, QC: Canadian Museum of Civilization, Mercury Series. No. 119.
- Nespor, Marina. 1986. The phonological word in Greek and Italian. In H.Anderson (ed.), *Sandhi Phenomena in the Languages of Europe*. Berlin: Mouton, 65-74.
- Nespor, Marina and Irene Vogel. 1986. *Prosodic Phonology*. Dordrecht: Foris.
- Revithado, Anthi 1999. Headmost accent wins.: head dominance and ideal prosodic forms in lexical access systems. The Hague: Holland Academic Graphics.
- Selkirk, Elizabeth O. 1980. The role of prosodic categories in English word stress. *Linguistic Inquiry* 11: 563-605.
- Shaw, Patricia A., S. J. Blake, Jill Campbell, and Cody Shepherd. 1999. Stress in hən'q'əmin'əm' (Musqueam) Salish. *Workshop on the Structure and Constituency Languages of the Americas* 4. UBC.
- Shaw, Patricia A. in press. Inside access: the prosodic role of internal morphological constituency. In Hanson, Kristin and Sharon Inkelas (eds.) *Kiparsky Festschrift*. MIT Press.
- Turner, Claire K. 2006. *The SENĆOŦEN resultive construction*. Uvic MA Thesis.
- Urbanczyk, Suzanne. 1996. Patterns of reduplication in Lushootseed. Phd. Dissertation, University of Massachusetts, Amherst. [Published 2001, New York: Garland.]
- Watt, Linda Tamburri 2001. Stress and strong suffixes in Squamish Salish. Ms., University of British Columbia.
- Willett, Marie Louise. 2003. A grammatical sketch of Nxa'amxcin (Moses-Columbian Salish). Phd. Dissertation. University of Victoria.